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DEPARTMENT OF THE ARMY
Pacific Ocean Division, Corps of Engineers
Fort Shafter, Hawaii 96858-5440

PODR 1110-1-6

Regulation
No. 1110-1-6

31 January 2001

Engineering and Design
QUALITY ASSURANCE OF LABORATORY TESTING PROCEDURES

1. PURPOSE. This regulation prescribes responsibilities and procedures for materials, water quality testing, and HTRW(Hazardous, Toxic, and Radioactive Waste)/Environmental analytical laboratory testing performed by and for Pacific Ocean Division district offices.
2. APPLICABILITY. This regulation is applicable to all district offices under Headquarters, Pacific Ocean Division (POD).
3. REFERENCES.
 - a. ER 1110-1-261, Quality Assurance of Laboratory Testing Procedures, 28 April 1999
 - b. ER 1110-1-263, Chemical Data Quality Management for Hazardous, Toxic, Radioactive Waste Remedial Activities, 30 April 1998
 - c. ER 1110-1-8100 Laboratory Investigations and Testing, 31 Dec 1997
 - d. EM 200-1-2 Technical Project Planning, 31 Aug 1998
 - e. EM 200-1-6 Chemical Quality Assurance for Hazardous, Toxic, Radioactive, Waste Projects, 10 Oct 1997
 - f. EM 200-1-1 Validation of Analytical Chemistry Laboratories, 1 Jul 1994
 - g. EM 1110-2-1906, Laboratory Soils Testing, 20 Aug 1986
 - h. American Society for Testing and Materials (ASTM):
 - (1) ASTM C 1077-95, Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for use in Construction and Criteria for Laboratory Evaluation.

(2) ASTM D 3666-96a, Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials ASTM D 3666, Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Bituminous Paving Materials.

(3) ASTM D 3740-96, Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

(4) ASTM E 329-98, Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

i. International Organization for Standardization (ISO) 17025 General Requirements for the Competence of Testing and Calibration Laboratories

j. "SHELL for Analytical Chemistry" Version 1.0, 2 Nov 1998

4. DEFINITIONS.

a. Validation. A process to verify that the laboratory is qualified to perform required tests for a project. Validation of a laboratory may consist of either inspection or audit as defined below.

b. Inspection. On-site examination of a laboratory in accordance with the requirements of paragraph 6 of this regulation.

c. Audit. Examination of inspection report and other documentation to verify the qualification of a laboratory.

5. POLICY. General. The district Commander is responsible for assuring that district and contracted commercial laboratories that are performing materials testing and chemical analysis of water, sediment, soil or air have the required capability. POD is responsible for assuring the conformance of this regulation in accordance with its Quality Assurance (QA) responsibility.

a. Material Testing Laboratories. Each district is required to have its laboratories and other laboratories used by the district, Architect/Engineer (A/E), or construction contractor validated for performing materials testing (aggregate, bituminous materials, concrete, rock, soil and other construction materials). The district should establish a quality assurance program to verify the accuracy of contracted laboratory results.

(1) Validation Schedule. Contracted laboratories and district Quality Assurance (QA) laboratories testing aggregate, concrete, bituminous materials, soils, rock and other construction materials shall have an initial validation performed prior to performance of testing and at least every two years thereafter.

(2) Validation Procedures. Validation of all material testing laboratories shall be performed and accomplished by an inspection or audit as discussed below.

Inspection. Inspection shall be performed in accordance with American Society for Testing and Materials (ASTM) E329. Inspection and validation of district laboratories shall be performed by the Materials Test Center (MTC) at Waterways Experiment Station (WES). Inspection and validation of contracted laboratories shall be performed by the MTC or by experienced and qualified inspectors subject to the approval of POD. The inspectors shall be thoroughly familiar with materials testing equipment, testing procedures and the peculiarities of local construction materials. Inspectors from the Corps of Engineers shall be GS-09 or higher and possess a minimum of (10) years of hands-on experience in the testing of soils, aggregates, asphalt and concrete.

Audit. A laboratory may be validated by auditing if it has passed inspection by the Concrete and Cement Reference Laboratory (CCRL) or AASHTO (American Association of State Highway and Transportation Officials) Materials Reference Laboratory (AMRL) within the past two years in accordance with ASTM E329. Audit shall be performed by the MTC. Inspection by MTC may be required after auditing if one or more of the critical testing procedures required in the project specification were not included in the CCRL or AMRL inspection report or if there is any concern that the laboratory may not be able to provide required services

(3) Validation report. After validation of a laboratory, a report of the findings by the testing laboratories will be sent to the district requesting validation. The testing laboratories will maintain copies for four (4) years after the validation or as otherwise deemed necessary. For labs under the control of the district, an information copy of the validation report shall be furnished to POD within 30 days after completion.

(4) All laboratories shall be revalidated at any time at the discretion of the district when conditions are judged to differ substantially from the conditions when last validated, or at the request of the Division.

b. Water Quality Laboratories. Laboratories performing routine (non-hazardous) water quality, wastewater, sludge, or sediment testing will require certification or validation.

(1) Validation Schedule. Laboratories performing routine water quality, wastewater, sludge and sediment testing shall be certified or validated at an interval not to exceed 24 months. Current State or Municipal certification will be acceptable.

(2) Validation Procedures. The districts shall develop a validation process in coordination with the Chemistry Quality Assurance Branch (CQAB) in WES. As an alternative, the districts may use certified State or Municipal laboratories with current certification that meets the requirement of the project specifications for testing laboratories.

(3) Validation report. After validation of a laboratory, a report of the findings by the testing laboratories will be sent to the district requesting validation. The testing laboratories will maintain copies for four (4) years after the validation or as otherwise deemed necessary. For labs under the control of the district, an information copy of the validation report shall be furnished to POD within 30 days after completion.

(4) All laboratories shall be revalidated at any time at the discretion of the district when conditions are judged to differ substantially from the conditions when last validated, or at the request of the Division.

c. HTRW/ Environmental Analytical Testing Laboratories.

Analytical Laboratories that support USACE HTRW/Environmental activities within the 50 United States of America and its territories are required to obtain a USACE laboratory validation prior to field studies or sample analyses and maintain the validation status throughout the response activities. Guidelines for this program are outlined in EM 200-1-1.

Analytical Laboratories that support the USACE HTRW/Environmental activities located outside the 50 United States of America and its territories shall be certified to meet the ISO 17025 requirements. Districts shall establish a formal written process to document the process to certify or validate these laboratories. This formal written process is to ensure that the validation process meets or exceeds the ISO 17025.

(1) Validation Schedule.

Analytical laboratories within the 50 United States of America and its territories shall have an initial validation prior to start of field work and at least every two years thereafter. Analytical laboratories outside the 50 United States of America and its territories shall have initial validation prior to start of fieldwork. The district shall in accordance with written policy and procedures establish the validation methods and certification period. It is recommended that validated be conducted at least every two years.

(2) Validation Procedures.

Validation of analytical laboratories within the 50 United States of America and its territories shall follow the guidance presented in EM 200-1-1. The validation shall be parameter, method and matrix-specific approval. Validation of analytical laboratories outside the 50 United States of America and its territories shall follow written policy and procedures established by the district.

(3) Validation report.

For validation of analytical laboratories that use the USACE Hazardous, Toxic, and Radioactive Waste Center of Expertise (HTRW-CX) a report will be generated and sent to the district with a copy to Pacific Ocean Division. For validation of analytical laboratories outside the 50 United States of America and its territories a report will be generated and sent to the district with a copy to Pacific Ocean Division.

- (4) All laboratories shall be revalidated at any time at the discretion of the district when conditions are judged to differ substantially from the conditions when last validated or at the request of the Division. The district shall maintain a register of validated laboratories.

6. STANDARDS OF ACCEPTABILITY

a. Material Testing Laboratories.

- (1) Aggregate, Concrete, Bituminous Materials, Soil and Rock. Laboratories for testing aggregate, concrete, bituminous materials, soil and rock shall be validated for compliance with ASTM E 329, Engineer Manual (EM) 1110-2-1906, or project specifications, as applicable.
- (2) Steel and other Construction Materials. Laboratories testing steel and other construction materials shall be validated for capabilities to perform tests required by project requirements and for compliance with ASTM E329.

b. Water Quality Laboratories. Laboratories engaged in routine (non-hazardous) analysis of water, sediment, and other samples for chemical analysis shall be inspected to assure that they have the capability to perform analyses and have quality control procedures. The requirements and procedures are described in the appropriate references of Appendix A of ER 1110-1-261. State or municipal certified laboratories, which provide the same testing services required by the project specifications, may be accepted. The use of analytical methods for procedures not addressed in these references will be evaluated by the accepting authority for conformance with project or program requirements.

c. HTRW/Environmental Laboratories. The intent of this regulation is to ensure the production of high quality data that satisfy the project specific data quality objectives. Chemical quality assurance is required to ensure analytical data generated for all projects meet these project objectives. For analytical laboratories within the 50 United States of America and its territories, ER 1110-1-263 and EM 200-1-6 provide the quality assurance protocols necessary to fulfill the chemical quality requirements. District specifications for environmental chemical analyses shall also follow the interim policy "Shell for Analytical Chemistry". This document shall serve as the linkage between project contract requirements and the lab validation program. For analytical laboratories outside the 50 United States of America and its territories, ISO 17025 and the written policy and procedures established by the district provide the quality assurance protocols.

7. RESPONSIBILITIES.

- a. POD is responsible for (1) ensuring that each district is adhering to this regulation and (2) ensuring corrective action for non-conformance situations. To assure that the substantive requirements of the regulation are met, POD will conduct technical system audits on each district on an annual basis. A memorandum and report outlining findings will be prepared by POD and provided to the district.
- b. The districts are responsible for (1) project planning to ensure data quality; (2) obtaining data of known quality through the use of district or contracted validated laboratories; and (3) submitting corrective action plan to POD. The corrective action plan shall be submitted within 30 days from the date of the POD report. The corrective action plan shall describe the remedies for all significant deficiencies identified in the POD report.
- c. The HTRW-CX is responsible for (1) administering the U.S. Army Corps of Engineers Laboratory Validation Program; (2) administering the performance evaluation sample program; (3) providing written reports to POD and each district that requested validation of a commercial laboratory; and (4) providing technical support to the HTRW program.

FOR THE COMMANDER:



JAMES K. LIGH
Director, Information Management

DISTRIBUTION (POD List 01-1):
B, C

CF:
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